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The Board of Governors
The University of North Carolina

REPORT OF THE COMMITTEE TO STUDY THE REQUEST OF EAST CAROLINA UNIVERSITY FOR A SECOND YEAR OF MEDICAL EDUCATION

December 29, 1972

REPORT TO THE BOARD OF GOVERNORS
OF
THE UNIVERSITY OF NORTH CAROLINA

BY THE SPECIAL COMMITTEE
APPOINTED BY GOVERNOR ROBERT W. SCOTT
ON JUNE 28, 1972, TO STUDY THE
CHANGE BUDGET REQUEST OF
EAST CAROLINA UNIVERSITY FOR THE
FUNDING OF A SECOND YEAR PROGRAM
IN MEDICAL EDUCATION

December 29, 1972

ERRATUM

Page 55: Add to footnote the following:

"decade were not available."

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A. INTRODUCTION

East Carolina University in June of 1972 submitted to the President of The University of North Carolina change budget requests to establish, during the biennium 1973-75, a two-year school of medicine. The second year program was designed, the proposal stated, as the "logical next step toward the eventual establishment of a degree-granting medical school at East Carolina University."

The East Carolina request therefore posed questions of immediate and long-range significance to the Board of Governors of The University, concerning existing and future programs in medical education to meet the health needs of the State. The importance of these policy considerations led President Friday, with the concurrence of Chancellor Jenkins, to recommend to the Chairman of the Board of Governors the appointment of a special committee of the Board to review the East Carolina request. Governor Scott approved President Friday's recommendation. On June 28 the Governor appointed to this committee:

Mr. Robert B. Jordan, III, Mount Gilead, N. C., Chairman
Dr. Andrew A. Best, Greenville, N. C.
Mr. William A. Johnson, Lillington, N. C.
Mr. Reginald McCoy, Laurinburg, N. C.
Mr. William B. Rankin, Lincolnton, N. C.

In his letter of appointment, Governor Scott said:

> You are requested to give your judgment and recommendation regarding this specific request to the Board of Governors when you are ready to do so. In reaching your recommendation, you are authorized to inquire into and examine those aspects and programs of medical education you may deem related to the specific issue before you.

Following the meeting of the Board of Governors in Charlotte on July 7, 1972, the committee met briefly for organizational purposes. In meetings since that time the committee has engaged in discussions with the following persons on one or more occasions:

Dr. William G. Anlyan, Vice President for Health Affairs, Duke University

Dr. Edgar T. Beddingfield, Past-President, North Carolina Medical Society, Wilson, N. C.

Dr. Steven Beering, Associate Dean, Indiana University School of Medicine

Dr. Harry Bruce, Director, Division of Health Professional Schools, National Institutes of Health

Dr. John A. D. Cooper, President, Association of American Medical Colleges

Dr. Ralph Dunn, Laurinburg, N. C.

Dr. Gus Forbes, Laurinburg, N. C.

Dr. Christopher C. Fordham, III, Dean, School of Medicine, UNC-CH

Dr. John R. Gamble, Lincolnton, N. C.

Dr. John Glasson, President, North Carolina Medical Society

Dr. Edward W. Glazener, School of Agriculture and Life Sciences, North Carolina State University

Dr. Dean Hayek, School of Medicine, East Carolina University

Dr. Richard Janeway, Dean, School of Medicine, Wake Forest University

Dr. Robert B. Jones, Wilmington, N. C.

Dr. Glen R. Leymaster, Director, Department of Undergraduate Medical Education, American Medical Association

Dr. Will Lybrand, Director, Division of Health Manpower Intelligence, National Institutes of Health

Dr. Manson Meads, Vice President for Medical Affairs, Wake Forest University

Dr. J. S. Mitchener, Jr., Laurinburg, N. C.

Dr. Edwin Monroe, Vice Chancellor for Health Affairs, East Carolina University

Dr. W. R. Purcell, Laurinburg, N. C.

Dr. C. H. William Ruhe, Director, Division of Medical Education, American Medical Association

Dr. James Schofield, Director, Division of Accreditation, Association of American Medical Colleges

Dr. Cecil Sheps, Vice Chancellor for Health Affairs, UNC-CH

Dr. Ronald L. Thiele, Dean, School of Allied Health and Social Professions, East Carolina University

Dr. Wallace Wooles, Dean, School of Medicine, East Carolina University

Additionally, members of the committee and members of the President's staff have conferred with responsible officials in medical education at the University of Illinois, University of California, University of Wisconsin, University of Missouri, Pennsylvania State University, Michigan State University, University of Florida, University of South Alabama, and University of Texas.

All of these individuals gave generously of their time and knowledge to further the work of the committee. With them the committee has discussed the full range of problems pertaining to the present state of medical education and health care delivery in North Carolina, and future needs of the State in these areas; and, on the strength of the information and insights gained from this process of inquiry the committee now submits this report to the Board of Governors.

B. THE EAST CAROLINA REQUEST

In accordance with newly-established budgeting procedures, East Carolina University submitted three separate budget requests directly relating to the continuing operation of the present one-year program in medicine and its expansion in the 1973-75 biennium to a two-year program.

The first was the Base Budget request for the continuation of the one-year program at its present level:

	1972-73	1973-74	1974-75
Salaries, EPA (16 faculty positions and 2 teaching fellows)	$400,200	$400,200	$400,200
Salaries, SPA (11 positions)	67,268	67,268	67,268
Supplies and equipment	100,000	100,000	100,000
Other expenses	106,556	106,556	106,556
TOTAL	$674,024	$674,024	$674,024

The second was a Change Budget request to augment the one-year medical program. This augmentation was requested to enable the school to provide areas of expertise in the basic medical and clinical sciences which were not provided for in the Base Budget.[1] The request cited a need for additional faculty in biostatistics, medical genetics, epidemiology, preventive medicine, and psychiatry, to provide a proper range of instruction in the first year program, and also stated that some increase in enrollment in the one-year program was anticipated in 1973-75. The total augmentation request for the one-year program in medicine was:

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[1] The present distribution of disciplines in the ECU medical faculty is: Pharmacology - 1; Anatomy - 5; Physiology - 3; Biochemistry - 2; Pathology - 2; Microbiology - 2; Medicine - 1. These and all other faculty data do not include EPA personnel in the medical program whose duties are primarily administrative -- i.e., the Vice-Chancellor and Dean.

	1973-74	1974-75
Salaries, EPA (4 additional faculty and 1 additional teaching fellow)	$113,000	$113,000
Salaries, SPA (3 additional positions)	20,676	20,676
Supplies and Equipment	53,000	23,000
Other expenses	52,638	42,438
TOTAL	$239,314	$199,114

The third request, which led to the appointment of this committee and the preparation of this special report to the Board of Governors, was a Change Budget request "to add the second year of medical education as the logical next step toward the eventual establishment of a degree-granting medical school at East Carolina University." The budget request itself was directed only toward the costs of the two-year program. Earlier in the year, East Carolina had submitted to the Division of Property Control, Department of Administration, plans for a Basic Medical Sciences Building of 200,000 square feet, for which cost estimates of $12,200,000 were provided.[2] This facility was not requested in the capital improvements ultimately submitted by East Carolina to the President for the 1973-75 biennium. The two-year medical program request contained operating funds only, in the following amounts:

	1973-74	1974-75
Salaries, EPA (9 additional faculty and 2 additional teaching fellows in 1973-74; and 5 additional faculty in 1974-75)	$251,000	$376,000
Salaries, SPA (5 additional positions)	33,504	33,504
Supplies and equipment	123,900	46,800
Other expenses	79,083	83,618
TOTAL	$487,487	$539,922

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[2] Letter from Mr. R. G. Bourne to Mr. Clifton C. Moore, Vice Chancellor for Business Affairs, East Carolina University, March 23, 1972.

It was proposed that, with these additional resources, combined with those requested to augment the one-year program, the size of the first year class at East Carolina be increased from 20 to 30 students in the fall of 1973, that the second year program be initiated in the fall of 1974 with this class of 30 students, and that a first year class of 40 students would be enrolled in 1974. Beyond 1974-75, it was stated that enrollment would be held at this approximate level of 40 students in each of the two classes until new facilities became available. Total operating costs requested by East Carolina, with an enrollment of 30 first year students in 1973-74, and 40 first year and 30 second year students in 1974-75, are as follows:

	1973-74	1974-75	Total-1973-75
Salaries, EPA (34 faculty and 5 teaching fellows by 1974-75)	$764,200	$889,200	$1,653,400
Salaries, SPA (19 positions by 1973-74)	121,448	121,448	242,896
Supplies and equipment	276,900	169,800	446,700
Other expenses	238,277	232,612	470,889
TOTAL	$1,400,825	$1,413,060	$2,813,885

Finally, a request was made by East Carolina University in its Change Budget for $338,150 in the 1973-75 biennium for the enrichment of its Health Affairs Library. This request was based in part upon the proposed expansion of the medical program.

East Carolina University stated, in its budget request, that six objectives would be reached through approval and funding of these requests:

1. Greater access to medical school would be provided for more North Carolinians.

2. The traditional step in the development of a new, degree-granting school of medicine would be accomplished.
3. Larger enrollments and thus greater economy and efficiency in the East Carolina program would be achieved.
4. An expansion of medical services by East Carolina to the State, and especially to the eastern region of the State would be achieved.
5. East Carolina would attain the necessary status to become eligible for federal funds under the Health Professions Educational Assistance Act and for foundation funds, as sources of support for new medical schools.
6. The University of North Carolina School of Medicine would be relieved of its obligation to reserve places in its second-year class for students from East Carolina, and would be enabled to implement enrollment increases and curricular changes in its first year class which the current arrangements prevent.

In summary, East Carolina requested the necessary funding for the establishment of an autonomous two-year medical school, as the next step toward a full degree-granting school. A schedule of movement toward the degree-granting school was not given, nor was any estimate given by East Carolina of eventual operating and capital costs and enrollments in the degree-granting school. At one point during conferences with the committee, the East Carolina Vice Chancellor for Health Affairs stated that it might be six years, or even ten years or more, before the degree-granting school was established.

C. ACCREDITATION AND STUDENT TRANSFER

The General Assembly authorized the creation of a two-year school of medicine at East Carolina as early as 1965, contingent upon accreditation by the American Medical Association's Council on Medical Education and the Association of American Medical Colleges.[1] East Carolina employed consultants that fall to advise the institution on the development of a medical program. In 1966 the consultants' report advised that the institution proceed instead to establish a program in life sciences and community health. That program was duly authorized, and it led to the development of the present School of Allied Health and Social Professions on the Greenville campus.

In 1969 East Carolina announced that it would request "a basic medical science curriculum - equivalent of the first two years of medical school," and it estimated that start-up costs for such a program would be $2,460,000. The General Assembly responded with an appropriation in 1969 of $375,000 to be used for "planning and developing a two-year curriculum" in medicine, again subject to meeting accreditation standards.[2]

Planning went forward during 1969 and 1970, and in October of 1970 a survey team appointed by the Liaison Committee on Medical Education of the AMA and the AAMC visited East Carolina.

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[1] Chapter 986, Session Laws of 1965.

[2] Chapter 1189, Session Laws of 1969.

Thereafter, the Liaison Committee made this assessment:

> ... after examining all the available evidence, including the report of its survey team on the visit of October 11-13, 1970, and reports of earlier consultations, [the Committee] is of the opinion that the state of development of the medical education program of East Carolina University does not justify provisional accreditation to accept an entering class of 1971.[3]

The State Board of Higher Education, after a review of the Liaison Committee report and further inquiry of its own into medical education in North Carolina, recommended that a one-year program in medicine be initiated at East Carolina, beginning in 1972, in cooperation with the School of Medicine of the University of North Carolina at Chapel Hill.[4] The General Assembly enacted legislation providing for such a cooperative program on July 21, 1971.[5]

This arrangement, under which the entering class of twenty first-year medical students was enrolled at East Carolina in September of 1972, meant that accreditation of the East Carolina program was necessarily through the School of Medicine of the University at Chapel Hill. The first essential feature of this arrangement, to insure compliance with accreditation standards, was the obligation of the UNC School of Medicine, as the accredited unit, to accept into its second-year class all students who successfully completed the one-year program at ECU.

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[3] Letter from Liaison Committee on Medical Education to President Leo Jenkins, January 29, 1971.

[4] BHE, Report ... Concerning the Request of East Carolina University for a Master of Medical Science Degree (Two-Year Curriculum for the School of Medicine), February, 1971, p. 19.

[5] Chapter 1053, Session Laws of 1971.

Accordingly, a special joint committee was named by the University of North Carolina and East Carolina University to develop the necessary cooperative agreement between the two schools. This joint committee reported in April, 1971,[6] and established the following as the terms of the cooperative arrangement:

1. ECU develop a curriculum "essentially equivalent" to the first year curriculum at UNC, except for the addition of physiology and pharmacology at ECU.
2. ECU would continue to recruit its faculty without any requirement for review by the medical faculty at UNC, although the two faculties were to "keep in touch informally" in the recruitment process.
3. ECU would establish separate committees in the areas of admissions, student promotion, and curriculum; and these functional committees at both institutions would have cross-representation from the faculty of the other institution.
4. UNC Medical School would accept all students promoted by ECU from its first-year program.

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[6] The members of the committee were: Dr. Edwin Monroe, Dr. Wallace Wooles, Dr. Cecil Sheps, Dr. Isaac Taylor, Dr. C. Arden Miller, Dr. Dean Hayek, Dr. Robert Williams, Dr. William Cromartie, and Dr. Merrel Flair.

5. Facilities available for the program at ECU were adequate for 40 first year students.
6. An inter-university advisory committee would be established to assume continuing responsibility for the operation of the cooperative arrangements. The deans of the two schools of medicine would serve as co-chairmen of the committee, and each would appoint three faculty members to serve on the committee.
7. Any federal funds which became available because of the joint program would be divided on a pro-rated basis.

It is important to note that this arrangement was developed prior to the restructuring of public higher education, when each of the institutions was governed by its own Board of Trustees and each was separately administered and budgeted. Neither school had anticipated or sought a formal cooperative agreement with the other. Officials at East Carolina had planned for a separate and autonomous program, while the School of Medicine at Chapel Hill had planned its expansion and programs around classes entering entirely at Chapel Hill, or, alternatively, through a first-year program in basic science operated at North Carolina State University in Raleigh. The actions of the General Assembly, and the requirements of accreditation as defined by the Liaison Committee of AAMC and the AMA, produced this different result. Further, since Chapel

Hill was obligated to enroll all students successfully completing the first year at ECU, the size of the program at ECU was held to twenty students because the University at Chapel Hill lacked facilities to accept more than this number. This development caused the School of Medicine at Chapel Hill to forego a budgeted increase of ten students in its entering class for 1972.

These developments related to the establishment of the one-year program at Greenville coincided with the regular accreditation review of the School of Medicine of The University of North Carolina at Chapel Hill. A survey team visited Chapel Hill early in March of 1971. A second visit was made in November of that year, to Chapel Hill and to Greenville, as a result of the establishment of the affiliated program at East Carolina.

As reiterated to this Committee by officials of AAMC and the AMA, accreditation of such a joint arrangement necessarily requires a sufficient degree of control, lodged in the accredited medical school, over affiliated programs on other campuses in four essential areas: admission, promotions, curriculum and faculty. This control is required because of the obligation of the School of Medicine of the University of North Carolina at Chapel Hill to meet accreditation standards.

It was the conclusion of the Liaison Committee of the AAMC and AMA that the cooperative agreements reached between the University of North Carolina at Chapel Hill and East Carolina

University in the spring of 1971 did not give satisfactory assurance of compliance with accreditation standards. This conclusion, in addition to the Liaison Committee's dissatisfaction with the administrative arrangements for North Carolina Memorial Hospital, prompted the Liaison Committee to grant limited accreditation, for a period of only two years, rather than the normal seven-year accreditation which the UNC Medical School had heretofore been accorded. An accreditation visit will therefore be made again early in 1973.

This Committee of the Board of Governors and the President have been deeply concerned over these developments. Assurances have been sought and received that appropriate corrective measures have been taken in the administrative arrangements for North Carolina Memorial Hospital. Further, President Friday has convened responsible officials in medical education from the University at Chapel Hill and East Carolina University to modify the cooperative agreements established in 1971, to insure full compliance with accreditation standards. When this modification is accomplished to the degree required by the accrediting authorities, it will necessarily mean a wider measure of involvement and direction by the University of North Carolina Medical School at Chapel Hill in the medical education program at East Carolina University.

The issue of accreditation has been carefully studied by this Committee both because of its intrinsic importance in the responsible administration and governance of the constituent institutions of our State-wide University and because it is directly related to any actions that would lead to the establishment of the requested two-year school at East Carolina University.

The two-year school of medicine for many years occupied a significant place in medical education in the United States. It is well to remember that the School of Medicine at Chapel Hill was a two-year school until 1952, and only in 1954 did it confer the M.D. degree upon a graduating class. Recent developments in medical education, however, have raised serious questions about the future of the two-year school as traditionally organized and maintained.

There are a number of reasons for this change. First, the medical curriculum has been significantly modified in recent years. Formerly the first two years were devoted to the basic sciences, and there was a sharp and clear break in the curriculum at the end of the second year. Now clinical work and basic science are distributed over the entirety of the medical education program. Moreover the curricula of the medical schools no longer have the degree of uniformity which was characteristic in years past. Further, some institutions have converted to three-year programs. Sixteen medical schools currently enroll all of their students in a three-year curriculum,[7] and a number of schools have some proportion of their students following a three-year rather than a four-year program. These developments have seriously complicated the problem of student transfer upon which the successful operation of the two-year school is entirely dependent.

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[7] According to data compiled in November, 1972, by the Bureau of Health Manpower Education, NIH.

The availability of transfer spaces has been affected by other developments. As the academic preparation and career motivation of medical students have improved, the attrition rate has fallen. Clinical facilities are being used much more intensively for each student beginning with the first year. Further, federal funding of medical education in recent years has placed a premium upon the expansion of the size of entering classes in the degree-granting schools, and the expansion of the entering classes at degree-granting schools has placed another limitation upon the ability of these schools to accept transfer students into their third-year classes.

These problems of student transfer and of curriculum articulation have led to the formation of new accreditation criteria which are currently under study by the AMA and AAMC. These proposed new accreditation standards, if adopted, will rule out the accreditation of new, autonomous two-year schools. Such a policy would mean that, in the future, two-year programs will be accredited only if they are affiliated with an already accredited degree-granting school which exercises sufficient control over admissions, promotion, curriculum and faculty; and which also is obliged to accept the students from the two-year school into the third-year class on the same basis as those students who enroll at the degree-granting school in the first two years.

If an autonomous two-year school is established, the proposed accreditation criteria will make it mandatory that there be a clear, identifiable commitment on the part of the responsible authorities, from the outset, that sufficient resources will be provided to develop a degree-granting medical school in accordance with a specified time schedule.

In either event, there must be a "clearly defined pathway" - in the words of one AMA official - to the M.D. degree for all students admitted into the two-year program if it is to be accredited.

It is not certain at this juncture that these accreditation criteria will be fully approved by the accrediting agencies. What is certain, however, is that the future of the two-year school is highly debatable. In 1940 there were ten such schools in the United States. By 1965 there were only three two-year schools in operation. Five two-year programs were initiated after that date. The current status of two-year schools is as follows:

Earlier schools

1. Dartmouth: Converting to a degree-granting school. First third-year students were enrolled in 1972. Facilities were not adequate to enroll all students in the 1971-72 second-year class; so some are still transferring to other schools.

2. North Dakota: Seeking an arrangement with the University of Minnesota or possibly converting to degree-granting school.
3. South Dakota: No plans to convert through 1974-75.

Newer schools

1. Rutgers: Converting to a degree-granting school, with its first third-year class enrolled in 1972-73.
2. Hawaii: Converting to a degree-granting school.
3. Brown: Converting to a degree-granting school.
4. Minnesota-Duluth: Continuing as a two-year program but under the University of Minnesota Medical School at Minneapolis. The medical school at Minneapolis takes all students who successfully complete the program at Duluth into its third-year class.
5. Nevada: No plans now to convert. It is seeking an arrangement to have all of its students accepted into the third year at the University of Hawaii when that institution converts.

This record shows that the autonomous two-year school is disappearing. These developments led this Committee to explore with great care the ECU proposal to establish such a program on that campus as an interim step. Specifically, the Committee inquired of officials at Duke University Medical School and the

Bowman Gray School of Medicine if they would commit themselves, as the ECU request suggests, to the acceptance of third-year transfer students from a two-year program at ECU. Duke officials noted that its attrition rate is among the lowest in the nation; and both schools reported that they currently have no transfer students in their third-year classes. Reliance upon these two schools for such transfer places would, under current experience, be impracticable. The Committee has necessarily concluded that there is no "clear pathway" to the M.D. degree within the State at the present time for students entering into a two-year program at East Carolina in the numbers proposed or on the schedule set forth. Such an approach is not, in our considered judgment, a viable alternative, since it would mean, at best, that the students would have to transfer out of the State to find a place. This in itself is undesirable, since it could serve to diminish the likelihood that these students would return to North Carolina to practice. Further, there is no assurance that a sufficient number of transfer spaces could be guaranteed. Therefore, accreditation would be doubtful.

The East Carolina request must therefore be evaluated upon the basis of a clear commitment by the Board of Governors to recommend the establishment on that campus of a degree-granting school of medicine. We will discuss this alternative later. Given these parameters, the Committee broadened its inquiry into a larger study of North Carolina's need for additional physicians.

D. THE PROBLEM OF HEALTH CARE DELIVERY IN NORTH CAROLINA

The basic question that has confronted this Committee in its study of the request of East Carolina is this: What can the Board of Governors recommend that will provide better medical care for more people in North Carolina, particularly for those in smaller population centers and surrounding rural areas? This broad question must first be examined and then the specific request of East Carolina must be considered to see how it fits into the wider needs of the State.

The problem of medical care delivery is partially one of the production of sufficient numbers of physicians, partially one of the geographic distribution of physicians, partially one of the field of medical practice that physicians choose and partially one of organizing medical practice so that the time and training of all health professionals are efficiently and effectively used.

The Production of Physicians

In 1970 there were 137.9 active, non-federal physicians (MDs) in the United States per 100,000 population.[1] There is no agreement on the ideal ratio of physicians to population. The yardstick long accepted was 100 per 100,000, but it is clear from the experience of millions of Americans that this ratio, particularly in view of the problems of distribution, is no longer adequate.

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[1] Source: Division of Health Manpower Intelligence, National Institutes of Health.

The Carnegie Commission in 1970, after reviewing the evidence of a national shortage of physicians, called for a 50% increase in the numbers of entrants into medical school by 1978.[2] This would mean an increase from 10,401 entering students in 1969-70 to approximately 16,400 by 1978-79. Only two years have passed since the Carnegie Commission's report was issued, and in that period of time there has been such marked expansion of plans for medical school enrollment that it appears that approximately 15,200 students will be entering the nation's medical schools by the fall of 1975, substantially ahead of the schedule set by the Carnegie Commission.[3] Officials of HEW estimate that, even if the medical schools grow no more than is now anticipated under existing federal support programs there will be, by 1980, approximately 430,000 physicians practicing in the United States.[4] This number would bring the national ratio of physicians per 100,000 from 137.9 to approximately 155, which is the highest ratio now existing in any geographic region of the country, the Mid-Atlantic region consisting of New York, New Jersey and Pennsylvania. Based upon such estimates HEW officials believe that by about 1980 the overall shortage of doctors will have ended.[5]

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[2] Higher Education and the Nation's Health: Policies for Medical and Dental Education, a special report and recommendations by The Carnegie Commission on Higher Education, New York, 1970.

[3] Journal American Medical Association, Vol. 222, No. 8, November 20, 1972.

[4] Manpower Report of the President, Department of Labor, March 1972. Also Division of Manpower Intelligence, National Institutes of Health.

Some authorities are less optimistic. The Board of Trustees of the American Medical Association, for example, holds that relief from the shortage of physicians is not in sight.[6]

The recent research study sponsored by the Carnegie Commission pointed out the impossibility of applying strict laws of supply and demand in the field of medicine and suggested that a reappraisal of needs would be in order in the late 1970's to see whether further expansion of medical schools was needed.[7] The Millis Report of 1971 called for a 50% increase in entrants to medical school by 1975--and as we have seen, an increase of this dimension will be very nearly achieved--followed by a review to determine if there are further needs.[8]

Thus, at the time that the public-at-large is expressing the need for more doctors, some authorities in the field are saying that, with the recent substantial increases in the capacities of medical schools, the period of critical nationwide shortage of doctors may be ended by about 1980.

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[5] Ibid.

[6] Letter dated December 8, 1972, from Dr. Hugh H. Hussey, Director of Scientific Publications, AMA, to Dr. Cecil G. Sheps, Vice-Chancellor, Health Sciences, The University of North Carolina at Chapel Hill.

[7] Higher Education and the Nation's Health: Policies for Medical and Dental Education, a special report and recommendations by The Carnegie Commission on Higher Education, New York, 1970.

[8] Millis, John S., A Rational Public Policy for Medical Education and its Financing, a report to the Board of Directors, The National Fund for Medical Education, New York, 1971.

In North Carolina the potential expansion of the three existing degree-granting medical schools can provide an even more dramatic growth in productivity than do the national estimates. The possibilities for North Carolina are discussed in Section E that follows.

The Geographic Distribution of Physicians

The distribution of physicians is a worldwide problem. Even in Israel, which has the world's highest ratio of physicians to population, there is difficulty in getting doctors to practice in rural areas.

Within the United States the ratios vary from 224 per 100,000 in New York state to 74 in Alaska and 76 in South Dakota.[9]

The same unevenness exists within individual states. For example, despite the high ratio for New York state, there are areas of New York City that are woefully short of physicians.

Experience in state after state makes it clear that merely increasing the overall supply of physicians will not of itself solve the problem of distribution. There is a persistent tendency of physicians to congregate in certain places and to avoid others.[10]

The statewide number of active, non-federal physicians (MDs) per 100,000 persons in North Carolina in 1970 was 103.1. This compared with 119.1 in Virginia, 85.1 in South Carolina and 113.5 in Tennessee.[11] When the North Carolina figures are analyzed on the basis of the 17 officially established planning districts, enormous variation is found. Region J (Chatham, Durham, Johnston, Lee, Orange and Wake counties) had a ratio of 293.3 physicians per 100,000, while Region D (Alleghany, Ashe, Avery, Mitchell, Watauga, Wilkes and Yancey counties) had 48.7 and Region R (Camden, Chowan, Currituck, Dare, Gates, Hyde, Pasquotank, Perquimans, Tyrrell and Washington counties) had 48.4.

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[9] Source: Dr. William A. Lybrand, Director, Division of Manpower Intelligence, National Institutes of Health.

[10] For a provocative discussion of this problem see Ginzberg, Eli, Men, Money, and Medicine, New York, 1969, particularly chapters 6 and 7.

Four of the regions that were above the median region are in the eastern half of the state (Regions J, O, Q & P), and four are in the western half (Regions B, G, F & D). Five of the regions that were below the median are in the eastern half (Regions R, N, K, M and L) and three are in the western half (Regions D, A and H). (See the figure on page 25 and the table on pages 26 and 27.)

Clearly there is a severe problem of distribution that extends over the entire length of the state.

Factors that Determine Where a Physician will Practice

The maldistribution of physicians leads one to ask: What are the factors that determine where a doctor will decide to live and practice? The principal factors may be grouped in three broad categories: (1) the general characteristics of the community (its

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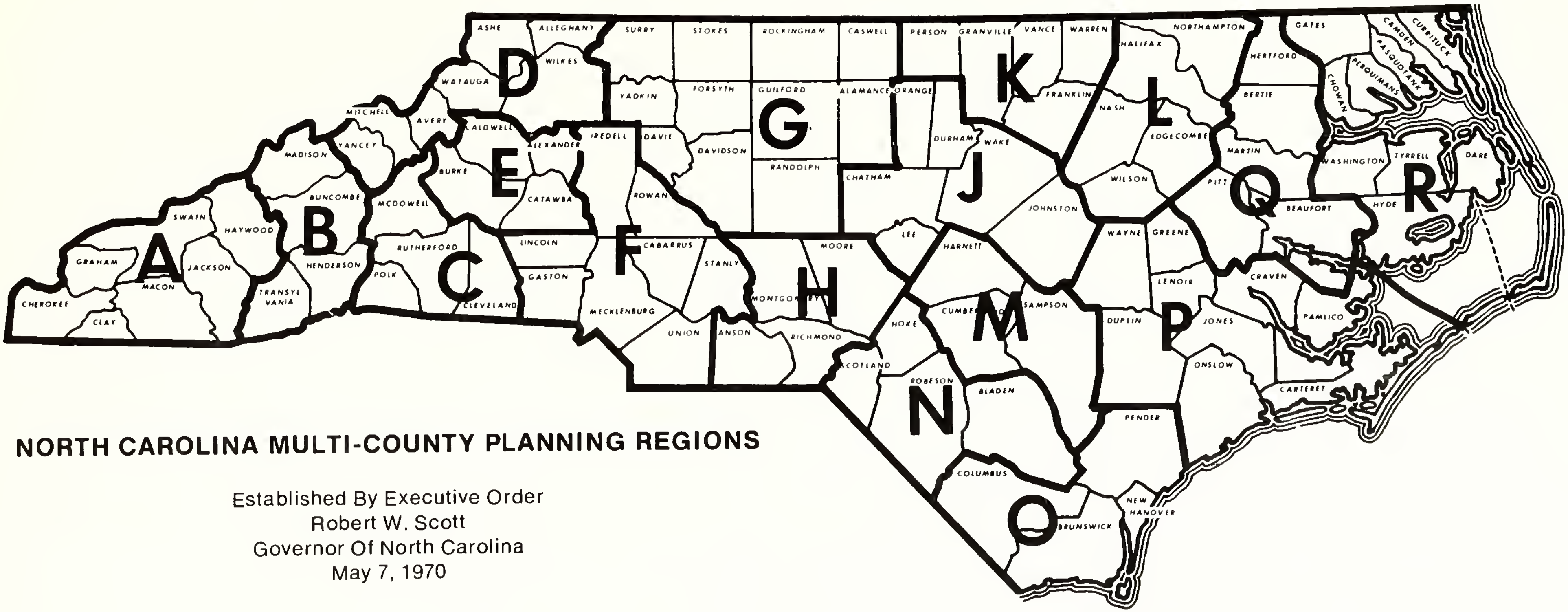
[11] Source: Division of Health Manpower Intelligence, National Institutes of Health.



NORTH CAROLINA MULTI-COUNTY PLANNING REGIONS

Established By Executive Order
Robert W. Scott
Governor Of North Carolina
May 7, 1970

PHYSICIANS IN NORTH CAROLINA PER 100,000 POPULATION

Rank	N.C. Multi-County Planning Regions	Population	Per-Cent Population Change 1960-1970	Physicians	Physicians Per 100,000
1	Region J - Chatham, Durham, Johnston, Lee, Orange, Wake	540,000	+21.1	1,585	293.3
2	Region B - Buncombe, Henderson, Madison, Transylvania	223,400	+ 4.2	254	113.8
3	Region G - Alamance, Caswell, Davidson, Davie, Forsyth, Guilford, Randolph, Rockingham, Stokes, Surry, Yadkin	981,100	+12.5	1,011	103.1
4	Region F - Cabarrus, Gaston, Iredell, Lincoln, Mecklenburg, Rowan, Stanly, Union	870,100	+18.3	762	87.6
5	Region O - Brunswick, Columbus, New Hanover, Pender	172,300	+ 4.2	136	79.0
6	Region E - Alexander, Burke, Caldwell, Catawba	227,000	+14.4	173	76.2
7	Region Q - Beaufort, Bertie, Hertford, Martin, Pitt	178,500	- 4.0	131	73.4
8	Region P - Carteret, Craven, Duplin, Greene, Jones, Lenoir, Onslow, Pamilco, Wayne	410,000 -110,100* 299,900	+ 3.8	215	71.7
9	Region C - Cleveland, McDowell, Polk, Rutherford	162,100	+ 4.4	111	68.5
10	Region L - Edgecombe, Halifax, Nash, Northampton, Wilson	246,700	- 7.2	165	66.9

Page 2 - continued

11	Region H - Anson, Montgomery, Moore, Richmond	121,600	- 2.4	79	65.0
12	Region A - Cherokee, Clay, Graham, Haywood, Jackson, Macon, Swain	115,100	- 0.8	68	59.1
13	Region M - Cumberland, Harnett, Sampson	306,700 -101,913** 204,787	+22.5	120	58.6
14	Region K - Franklin, Granville, Person, Vance, Warren	134,000	- 5.7	78	58.2
15	Region N - Bladen, Hoke, Robeson, Scotland	154,600	- 5.5	87	56.3
16	Region D - Alleghany, Ashe, Avery, Mitchell, Watauga, Wilkes, Yancey	127,300	+ 3.4	62	48.7
17	Region R - Camden, Chowan, Currituck, Dare, Gates, Hyde, Pasquotank, Perquimans, Tyrrell, Washington	97,200	- 3.4	47	48.4

* Naval hospitals in Onslow and Craven Counties provide medical care for 48,000 active duty, 3,200 retired, and 58,900 dependents of active duty and retired military personnel. Approximately ninety (90) physicians staff these hospitals.

** An Army hospital and other military medical facilities in Cumberland County provide medical care for 36,469 active duty, 3,960 retired, and 61,484 dependents of acitve duty and retired military personnel. Approximately one hundred (100) physicians staff Womack Army Hospital; an additional fifty (50) physicians serve the 82nd Airborne Division, John F. Kennedy Special Warfare Center, and Pope Air Force Base.

climate, growth rate, degree of urbanization, recreational opportunities, average family income, quality of public schools, etc.), (2) the personal history of the individual (particularly the so-called "attachment events"--the individual's place of residence prior to studying medicine, his place of medical education, his place of internship and his place of residency) and (3) the medical facilities that the community affords (the proximity of a good hospital, the availability of adequate clinics or other facilities, the easy accessibility of specialists and consultants in various fields, etc.).

Researchers have found certain of these factors very difficult to analyze and segregate. It is often hard for an individual doctor to say what factor or factors were dominant in attracting him to a community. Nevertheless research has revealed certain correlations that may have significance for North Carolina:

1. More than half of all the doctors in the country practice in the state where they lived prior to undertaking medical training.[12]

This being true, it is disturbing that as late as 1967 only 1.3% of the students entering the medical schools of the United States were North Carolinians although the state had 2.5% of the national population.[13] Three years later the numbers of North Carolinians in the nation's medical schools had risen to 1.7% but was still well below the proportion that the state's population would suggest.[14] Clearly it is incumbent on the state to encourage more North Carolinians to study medicine.

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[12] Weiskotten, H., Wiggins, W., Altenderfer, M., Gooch, M., and Tipner, A.: "An Analysis of the Distribution and Characteristics of Medical School Graduates, 1915-1950," Journal of Medical Education, Vol. 35, 1960, pp. 1071-1121.

2. The greater the number of "attachment events" (place of residence prior to studying medicine, place of medical school training, place of internship and place of residency) occurring in a single state, the higher the probability that the physician will choose to practice in that state. Moreover, the more recent attachment events have the most influence on the location of practice.[15]

In support of this latter statement a recent article in the Journal of Medical Education concluded as follows: "In the context of physician training, then, the most effective way to attract physicians to a location is to increase the number of interns and residents that are being trained in that area. This could be done by increasing the number of such programs as well as by increasing the salaries offered.[16]

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[13] "Medical Education in the United States, 1967-68," Journal American Medical Association, Vol. 206, No. 9, November 22, 1971.

[14] "Medical Education in the United States, 1970-71," Journal American Medical Association, Vol. 218, No. 8, November 22, 1971.

[15] Yett, D., and Sloan, F., "Analysis of Migration Patterns of Recent Medical School Graduates." Presented at the Health Services Research Conference on Factors in Health Manpower Performance and the Delivery of Health Care, Chicago, December 9, 1971. (Mimeographed.)

Statistics compiled by the AMA revealed that North Carolina hospitals plan to offer a total of 1,165 internships and residencies for the year 1973-74 out of a national total of 68,689.[17] These figures mean that 1.7% of the house staff positions are in North Carolina, a state having approximately 2.5% of the national population. In other words our state offers only about half as many positions as its population would seem to warrant.

It is interesting to note that North Carolina's experience in filling the house staff positions that it offers has been relatively good. In 1971, 73% of the internships were filled, as compared with a national average of 78%, and in the same year 89% of the residencies were filled, as compared with a national average of 85%. Our success in filling house staff positions is particularly remarkable in view of the fact that North Carolina has a lower proportion of foreign medical graduates (FMGs). Only 9% of the residents in 1971, for example, were FMGs, while in that year 32% of all residencies in the nation were filled by FMGs. Other states in our region had a considerably higher proportion of FMGs than did North Carolina, e.g. 26% in Florida, 41% in Georgia and 19% in Virginia.[18]

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[16] Scheffler, R. M., "The Relationship between Medical Education and the Statewide Per Capita Distribution of Physicians," _Journal of Medical Education_, Vol. 46, November 1971.

[17] _Directory of Approved Internships and Residencies_, 1972-73, American Medical Association, data as of September 1971, pp. 6 and 15.

If, as the studies clearly indicate, there is a strong relationship between the place of internship and residency and the place of ultimate practice, it would seem that North Carolina, as a matter of high priority, should give attention to expanding the numbers of its internships and residencies. Furthermore, these positions should be spread as widely as possible over the state, and the salaries and other conditions of work should be made attractive to young doctors.

3. There is a high correlation between the number of hospital beds in a community and the number of specialists there,[19] but some studies suggest that the number of beds has no significance for general practitioners.[20]

A recent study of physicians in Appalachia revealed that the factor most often cited by the doctors as detracting from the appeal of Appalachian medical practice was the absence of modern hospitals and equipment.[21]

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[18] Ibid.

[19] Mountin, J. et al, "Location and Movement of Physicians, 1923 and 1938--General Observation," Public Health Reports, 57, November 1942. See also Yett, D., and Sloan, F., "Analysis of Migration Patterns of Recent Medical School Graduates." Presented at the Health Services Research Conference on Factors in Health Manpower Performance and the Delivery of Health Care, Chicago, December 9, 1971. (Mimeographed.)

[20] Marden, P., "A Demographic and Ecological Analysis of the Distribution of Physicians in Metropolitan America, 1960," American Journal of Sociology, 72 (3) 290-300, November, 1966.

Clearly it behooves the state and the local communities to consider ways of getting adequate hospitals, clinics and other community health facilities strategically located over the state.

4. The presence of a medical school in the immediate area has been found to be a significant influence in attracting specialists to that area but not in attracting general practitioners.[22]

The significance of this factor is very clearly seen in the numbers of physicians located in Orange, Durham and Forsyth counties. If money and skilled professional personnel were unlimited, one might conclude that medical schools should be built in a number of other regions in the state. The effect of one additional medical school on the medical care of the entire state is, however, a more complex question that will be discussed later in this report.

The Field of Medical Practice

In order to provide health care for the people of the state it is necessary, not only to encourage a reasonable distribution of physicians geographically, but also to encourage doctors to go into those fields in which there is the greatest need.

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[21] Champion, D. J., and Olsen, D. B., "Physician Behavior in Southern Appalachia: Some Recruitment Factors," Journal of Health and Social Behavior 12, September, 1971.

[22] Joroff, S., Navarro, V., "Medical Manpower: a Multi-Variate Analysis of the Distribution of Physicians in Urban United States," Medical Care 9:428-438, 1971. Scheffler, R., "An Empirical Investigation into the Geographic Distribution of Physicians and Specialists," Dissertation for Ph.D., New York University, 1971.

Approximately one-fourth of the physicians of the nation are currently engaged in primary care, i.e. in the fields of internal medicine, pediatrics, general practice, family medicine and obstetrics-gynecology.[23] Most experts suggest that about half the physicians of the nation should be engaged in primary care. In recent decades, however, there has been a national tendency for doctors to go into more specialized fields.

An analysis of the activities of the graduates of the three degree-granting schools in North Carolina for the years 1955 through 1964 shows that 44% of the graduates of Duke, 47% of the graduates of Bowman Gray and 49% of the graduates of Chapel Hill went into primary care. Although these percentages, viewed in light of national trends, seem fairly good, the preferences of students currently enrolled in Chapel Hill show an even stronger orientation toward primary care. In the current year's senior class, for example, 76% of those expressing a preference have selected a primary care field. (See the table on page 34.)

This trend at Chapel Hill is heartening and no doubt reflects, among other things, a deliberate attempt at orientation on the part of the medical school and a growing social consciousness on the part of the students.

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[23] Dr. C. H. William Ruhe, Director, Division of Medical Education, American Medical Association.

INDICATIONS OF A PRIMARY CARE CAREER OBJECTIVE
IN THE SPRING OF THE SENIOR YEAR
OF THE FOLLOWING CLASSES
UNC SCHOOL OF MEDICINE

	1969	1970	1971	1972	1973
No. in Class	67	71	77	70	87
Primary Care	32	42	47	43	60
% in Primary Care	48	59	61	61	69*

*Eight of the 87 persons in the class were undecided. If these are excluded, the proportion choosing primary care is 76%.

12/1/72

The Economic Use of Physicians' Time and Training

Many writers on the shortage of physicians have concluded that, no matter how many additional physicians may be produced, the nation will not have enough unless at the same time the system of health care delivery is improved.[24]

The Carnegie Commission, for example, calls for "strong support...to the newly-developing and innovative programs for the training of physician's associates and assistants."[25]

We are fortunate in this state that our three degree-granting schools have been among the pioneers in training personnel of this kind. The first medical school in the nation to develop a major program for training physician's assistants was Duke. Duke's program extends two years, leading to a certificate. Each class is currently about 40. Bowman Gray has also pioneered in the training of physician's assistants. Its program is now in its third year, and each class consists of about 20. The School at Chapel Hill has been a leader in the education of family nurse practitioners. About 20 persons are currently enrolled in each class of that program, and it is expected that the class size will grow to 71 over the next three years.

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[24] See, for example, Castleton, K. B., "Are We Building Too Many Medical Schools?" Journal American Medical Association, Vol. 216, No. 12, June 21, 1971.

[25] *Op. cit.*, p. 37.

The experience with all of these programs has been extremely good. Physician's assistants and family nurse practitioners are eagerly sought after, and most of those doctors who have had the experience of working with such persons are enthusiastic in support of the concept. Not only do these auxiliary personnel save the time of the doctor, they also help reduce the cost of medical care, and they have proved to be particularly useful in extending medical care to outlying regions.

The training of physician's assistants and nurse practitioners is only one of a number of means for making medical services available in communities that need them. Another method that is being tried in North Carolina with considerable success is the establishment of community clinics along the lines of the Walstonburg Clinic, developed with the help of the medical school at Chapel Hill, and of the Louisburg Clinic, developed with the help of Duke. These clinics are typically staffed by auxiliary personnel who are in touch by telephone with the doctor, and the doctor himself visits the clinic for a short period each day to see the more difficult cases. The concept of the community health clinic is one that holds promise and needs additional study and support in many areas of the state.

The neighborhood health education center is another model that is promising in the delivery of health care. The School of Medicine at Chapel Hill has recently been given a federal grant of

$8.5 million for the development of such centers, particularly in the eastern part of North Carolina. Over the next five years this program, with this kind of substantial support, should prove to be helpful in attracting health care personnel to needy areas.

The three degree-granting medical schools of the state are developing an increasing number of affiliation agreements with community hospitals. Chapel Hill now has six such agreements in operation, with four more in process of development. These agreements make possible clinical training for undergraduate medical students, and they facilitate development of internships and residencies. Such affiliations are a valuable means of getting young physicians into areas of the state that need doctors. It would appear that much additional development of clinical affiliations is warranted. This is an activity that needs further study and the full support of the state.

Some Conclusions Concerning Health Care Delivery

It is clear that the problem of health care delivery is not simply one of the production of additional doctors. The problem is also one of the distribution of doctors and of getting a sufficient number to go into primary care fields. Further, it is a problem of encouraging the development of such teams, paramedical personnel, clinics and other devices as will extend medical care to areas that now lack it. Major efforts toward these various goals are needed in North Carolina and have been discussed.

Despite the need for undertaking all of these various activities, it must be recognized that the doctor is an indispensable member of the medical team, the key member. Unless institutions in North Carolina are training a substantial number of doctors, there will be a continuing risk that too few of our residents will study medicine and that those who do will study in other states and will be lured into practice there. Furthermore, the production of a substantial number of doctors within the state should make it easier to fill internships and residencies, and, as we have seen, these positions play a significant role in determining where a physician will ultimately practice.

The Committee sees merit in the suggestion of the Carnegie Commission and of the Millis Report for a re-examination, after a few years' time, of the level of production of physicians. Nevertheless, we do not believe there is any danger that this state in the foreseeable future will produce too many. Our proportion of doctors is already substantially below the national average, and there is much catching up to be done. Moreover, the fact that North Carolina has a relatively low percentage of foreign-trained doctors accentuates the overall shortage. Further, we anticipate that the level of the public's demand for medical care will continue to rise and that, despite the various ways of making better use of a doctor's time and ability, a much higher ratio of physicians to population will prove to be needed.

In view of all these considerations the Committee concludes that there is an urgent need to increase the number of physicians trained in North Carolina, with special emphasis on the training of those who are residents of the state.

E. METHODS FOR PRODUCING MORE PHYSICIANS

Having established a need for a larger number of practicing physicians to meet the health care requirements of North Carolina, the committee explored various methods by which this policy might be implemented. At least three methods, singly or in some combination with one another, are open to the Board of Governors.

One method is to expand the present program of State aid to private medical schools in North Carolina, and to Meharry Medical College in Nashville, to increase their enrollments of North Carolinians. The program with Meharry Medical School is a long-standing one, initiated through an SREB contract in 1949. It provides now for the enrollment of twenty North Carolina residents in Meharry and is supported by State appropriations of $65,000 during the current fiscal year.

In 1969, recognizing the important contributions made to the medical care of North Carolinians by the Bowman Gray and Duke Medical Schools, and recognizing also the serious problems being encountered by these institutions because of the rapidly rising costs of medical education, the North Carolina General Assembly for the first time provided public funds to assist in the education of North Carolinians at these institutions. For the 1969-71 biennium, there was an appropriation of $2,500 for each newly-enrolled North Carolina student at each institution; and $250 of each such sum was to be credited to the student's annual tuition. In 1971 the General Assembly authorized and funded an allocation of $3,000 for each North

Carolinian enrolled, starting with the entering class of 1969, with the stipulation that $500 of each such allocation be pooled into a fund for assistance to needy North Carolina students.

Although never funded at the level requested by these institutions, or at the level recommended by the Board of Higher Education in 1969, the response of both Bowman Gray and Duke has been to increase significantly their enrollment of qualified North Carolina applicants. In the first year of the program of aid (1969), Duke enrolled 10 North Carolinians in its beginning class, and in 1972 it enrolled 30. At Bowman Gray the increase has been from 30 in 1969 to 45 in 1972. At both institutions, the percentage increase in North Carolina students in the entering class has been significantly greater than the percentage increase in the total size of the entering class. (At Duke the increases have been 200% and 37%, respectively, and at Bowman Gray 50% and 19%.) The committee believes that an expansion of this program of State aid would lead to an even larger enrollment of North Carolinians at these institutions.

A second method to effect an increase in the number of physicians trained in North Carolina, and the number of North Carolinians trained as physicians, would be to increase further the size of the School of Medicine at Chapel Hill.

As we have noted, the School of Medicine at Chapel Hill was converted from a two-year to a four-year program beginning in 1952. In 1953-54, when for the first time it enrolled four classes, the total enrollment was 231. By 1960 this enrollment had increased to 258, in 1970 it had risen to 305, and in 1972-73 it has reached 427, including an entering class of 110 students in residence at Chapel Hill plus 20 entering students at Greenville. The possibility of further increases in the entering class, and in the output of physicians from Chapel Hill, is a second method readily available to meet this need.

As a third method, the Board of Governors could recommend the establishment of a second state-supported degree-granting medical school. The request before this committee from East Carolina University is directed to this end. Twenty-six new medical schools have opened in the United States between 1960 and 1972, and a twenty-seventh is due to open in January of 1973. This method has been discussed by many citizens and groups in our State in recent years, generally focusing upon East Carolina University, with some discussion of Charlotte as the site for a second degree-granting school. The committee has considered this method for increasing the supply of physicians.

As we have already emphasized, this committee found quite early in the process of its deliberations that it was unanimous in believing that, on the evidence shown, North Carolina needs as a matter of high priority to expand its output of physicians. We agreed that all of the above three methods were open to us as means of achieving this end. As members of the Board which is charged with the governance of all public senior institutions of higher education, and charged also with the development of a coordinated plan of higher education for our State, we concluded also that in connection with each of these three methods we had to seek reasonably clear answers to these questions:

1. What will be the costs of achieving a given level of increase in the production of physicians?
2. What span of time will be required to achieve significant increases in the production of physicians?
3. What possible effects will such an increase have on the physician-population ratio in North Carolina, and, if achieved, how will these additional physicians influence the delivery of health care?

F. COST ANALYSIS AND TIME PROJECTIONS

Federal Funding Availability

One prior issue to be explored before proceeding to an analysis of costs and time-frame for any of the methods to increase the output of physicians is the availability of federal funding for this purpose. The committee has looked carefully into this matter, and the situation can be characterized in these terms: Federal funding for capital projects is severely limited, federal funding for current operations is presently below the levels authorized, and there is little prospect for any major increase in funding. The conclusion is clear: Our planning for increasing the production of physicians in North Carolina must proceed on the assumption that we must depend largely upon State tax sources.

For capital projects, as authorized under the Comprehensive Health Manpower Training Act of 1971, Congress appropriated $142.3 million for grants and $800,000 for interest subsidies in fiscal 1972. In fiscal 1973, the Administration requested an additional $1 million for interest subsidies but no additional funds for construction grants. All of the $142.3 million will be obligated in the current fiscal year, and there is no indication of any major change in federal policy which would bring about large appropriations for construction grants to medical or other health professional schools.

For current operations, there are three kinds of funds provided under the Comprehensive Health Manpower Training Act of 1971 which are pertinent to our present situation. The first is the program of capitation grants. To be eligible for these funds, a medical school had to increase the size of its entering class in 1971 on the basis of a stated formula and to maintain that new base. In addition, the Act provides for an "enrollment bonus" of $1,000 per student for further increases beyond the 1971 entering class, in accordance with a specific formula.

Two things must be emphasized concerning these capitation grants: First, they are an entitlement, awarded on this formula to all accredited schools; but, second, the actual size of the grants depends upon appropriations. Congress has not provided funding to the levels authorized. During the current year Congress provided an appropriation sufficient only for 65% of the eligibility. The Bureau of Health Manpower, NIH, was able to raise this level to 69.4% for 1972-73 through various administrative actions. Thus, the School of Medicine of the University of North Carolina at Chapel Hill in 1972-73 had an eligibility under this program for approximately $1.1 million. It is actually receiving $779,000, and these funds take the place of some previous support funds given through institutional grants, special project grants, and the physicians' augmentation grant. East Carolina University receives a pro-rated share of these funds, for the twenty students enrolled on its campus.

The 1971 Act provides further for a program of conversion grants for any two-year accredited school of medicine which is converting to an M.D. degree-granting school. This is a one time grant of $50,000 for each student in the first third year class. These funds are an entitlement also and, moreover, they are funded at 100%. Under the present legislation application for a conversion grant must be made before July 1, 1974 and the first third year class must be enrolled not later than the school year beginning in fiscal 1975, i.e., 1974-75.

Finally, the 1971 Act provides for start-up grants for a new school of medicine which opens with at least 24 students enrolled. In the year before it opens such a school may apply for a grant equal to $10,000 times the number of students it expects to enroll in its first year. In the first year that it has students the grant is $7,500 for each student, in the second year $5,000, and in the third year $2,500, i.e., the amount of the capitation grant. However, the start-up grants are not entitlements, as are capitation and conversion grants. Start-up grants are awarded through a process of competitive application. Further, they are like capitation grants in that the size of start-up grants is determined by the level of funding.

An extension of the program of capitation grants seems likely in 1975. Obviously it cannot now be determined what additional requirements, such as mandatory increases in the size of entering medical class, will be included in the new legislation. Conversion and start-up grants may also be renewed. It is difficult at this point, however, to find any basis upon which to predict a major increase in federal funding after 1975, or any major increase in the funding of capital projects. The 1972 Manpower Report of the President indicates a belief that the anticipated national production of physicians will be sufficient "to eliminate overall shortages before 1980." HEW estimates have been that the number of physicians needed by 1980 would range from 416,000 to 436,000 (as compared with 320,000 active physicians at the close of 1970), and the 1972 Report predicts that, with existing capabilities of U.S. medical schools and increased capabilities already programmed, the upper level of more than 430,000 will be achieved.[1] The Report then addresses itself to the need to implement planned increases in medical school graduates, with particular emphasis upon accelerating medical education; to the improvement of the utilization of physicians; and to the improvement of the distribution of physicians, geographically and by specialty.

These are the considerations which have led this Committee to conclude that, whatever course we elect to increase our output of physicians, we should plan to rely primarily upon the tax sources of the State of North Carolina.

Method One: Expanding Enrollments of North Carolina Students at Bowman Gray and Duke

We have noted previously the levels of State support provided to Bowman Gray and Duke medical schools for the enrollment of North Carolina students, and the response of these schools to this assistance. It is obvious, of course, that the present level of support - $3,000 for each North Carolinian, of which $500 must go into a special fund to aid needy North Carolina students - is significantly below the costs of operation per student. It is, moreover, significantly lower than the level of assistance given to private medical schools in many other jurisdictions.

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[1] Manpower Report of the President, Including A Report on Manpower Requirements, Resources, Utilization and Training, by the Department of Labor (March, 1972), pp. 130-131.

The two medical schools have petitioned The University to increase the level of State appropriations for each North Carolina resident enrolled. This committee asked the President to discuss with appropriate officials at Bowman Gray and Duke their willingness to increase the numbers of qualified North Carolinians in conjunction with an increase in State assistance to $5,000 for each resident student enrolled this biennium, with possible further increases after that date. Once again both private medical schools responded positively. Bowman Gray indicated that it was prepared to continue to enroll 45 qualified North Carolina residents in each entering class of 89 students in 1973-74 and 1974-75. This would mean a total of 178 North Carolinians out of 345 students enrolled by 1974-75, compared with 157 of 315 in 1972-73. In 1975-76, when Bowman Gray anticipates increasing the size of its entering class to 98, it has indicated that it is prepared to increase the enrollment of qualified first year North Carolina residents from 45 to 52. This would increase the proportion of North Carolinians to 187 of 365 students that year, and a continuation of this level of admissions would mean a total enrollment of

208 North Carolinians out of 392 by 1978-79, and a holding at this level thereafter. Thus, total enrollment by 1978-79 would have increased by 24% over that of the current year (1972-73), and the enrollment of North Carolina residents would have increased by 32% in that same period,[2] and these higher enrollment levels would be maintained thereafter.

Duke has indicated that it is prepared to continue to enroll 30 qualified North Carolina residents in each entering class of 114 students in 1973-74 and 1974-75. This would produce a total of 115 North Carolinians out of 450 students enrolled by 1974-75, compared with 84 of 382 in 1972-73. Duke anticipates increasing the size of its entering classes to 126 in 1975-76, and it has indicated that it is prepared at that time to increase the number of qualified North Carolina residents in the entering class from 30 to 36. This would yield an enrollment of 129 North Carolinians out of 473 students that year, and a continuation of that level of admissions would produce an enrollment of 144 North Carolina residents in a student body of 504 by 1978-79 and a holding at this level thereafter. Thus, total enrollment in 1978-79 would have increased by 32% over that of the current year (1972-73), and the enrollment of North Carolina residents would have increased by 71% in that same period,[3] and these higher enrollments would be maintained thereafter.

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[2] See Table A for a detailed presentation of these projected enrollment trends.

[3] See Table A.

On Table A we have projected these enrollments increases, and Table B shows the number of physicians graduating each year if these objectives should be met. As Table A indicates, achievement of these objectives would increase enrollments of North Carolina residents in Bowman Gray and Duke from the present 241 to 352 by 1978-79, while total enrollment at the two institutions would rise from the present 697 to 896.

As Table B shows, this would mean that:

> Bowman Gray would graduate a total of 807 students with the M.D. degree during the period 1971-80, of whom 399 would be North Carolinians, as compared with 510 graduates of whom 249 were North Carolinians during 1961-70.
>
> Duke would graduate a total of 1035 students with the M.D. degree during the period 1971-80, of whom 241 would be North Carolinians, as compared with 816 graduates of whom 168 were North Carolina residents during 1961-70.

Using the enrollment projections in Table A and assuming increases in State assistance levels, an average annual enrollment of 322 North Carolinians at Bowman Gray and Duke can be attained for the period of 1973-80 at average annual appropriation of $1.6 million. The state assistance levels assumed in the calculation are: an appropriation of $5,000 for each North Carolina resident enrolled at Bowman Gray and Duke each year of the 1973-75 biennium; appropriations of

$5,000 per student each year thereafter for the number of residents not exceeding the 1974-75 resident enrollment; and appropriations of $6,000 per student each year after 1974-75 for the number of residents exceeding the 1974-75 resident enrollment.

It seems clear that an increase in State assistance, related to an increase in total enrollments and in enrollments of North Carolina residents, will quickly produce an increase in numbers of physicians trained in North Carolina, and at reasonable costs. Our recommendations in this area will be set forth in Part G of this report, below.

We believe also that the Board of Governors should increase the level of assistance provided to North Carolinians attending Meharry Medical College, consistent with any action taken to increase assistance to students at Bowman Gray and Duke. Our relationship to Meharry is one of contractual agreement arranged through SREB. However, we believe it is reasonable to assume a continuation of the present level, i.e., approximately 20 North Carolinians enrolled each year.

Method Two: Expansion of the School of Medicine of The University of North Carolina at Chapel Hill

Our conclusion that North Carolina requires more physicians led the committee to request the President also to obtain projections for expanding further The University's medical school at Chapel Hill, together with estimates of costs required to meet the projections. Chancellor Taylor and his colleagues responded with this plan: The entering class (including any students enrolled in affiliated programs at East Carolina or elsewhere) would continue at 130 through 1974-75. This would mean a growth in total enrollment from 427 to 500. In 1975-76 the entering class would be increased to 140, and in 1976-77 it would be further increased to 160. Holding at this level, this would mean four classes of 160 each, or a total enrollment of 640 by 1979-80. It is further assumed that the medical school at Chapel Hill would continue its present policy of holding at least 90% of the places in each entering class for North Carolina residents.

The University of North Carolina at Chapel Hill has previously planned two major capital projects to provide for further expansion of the School of Medicine. These projects have been planned in association with enrollment increases already initiated, and which have increased the number of first-year medical students in residence at Chapel Hill from 85 in 1969-70 to 112 in 1972-73. The two capital projects are incorporated into the Board of Governors' budget requests for 1973-75:

Renovation of MacNider Building (included in Line 18 of the Schedule of Priorities)	$ 4,050,000
New Laboratory - Office Building (included in Line 32 of the Schedule of Priorities)	12,320,000

These additional facilities, plus renovation funds which should not exceed $1 million in the period 1973-80, will be adequate for the further projected increase to four classes of 160 students each.

With reference to clinical facilities, it should be noted that North Carolina Memorial Hospital has certain modernization and expansion plans in process which are not related to any increase in the student enrollments in the School of Medicine. No further expansion of the hospital is recommended in connection with the expansion of the medical school. To provide adequate clinical experience for an increased enrollment of medical students, the School of Medicine at Chapel Hill looks to substantial further development of the program of community hospital affiliations. As of September, 1972, the School had agreements with Moses H. Cone Hospital, Greensboro; Charlotte Memorial, Charlotte; New Hanover, Wilmington; Wake Memorial, Raleigh; Edgecombe General, Tarboro; and Nash General, Rocky Mount. An agreement with Halifax Memorial in Roanoke Rapids also became operational this current academic year, and affiliation agreements are under discussion in other localities. The continued development of these off-campus clinical programs may require the construction of some special educational facilities, but it is not expected that requests for State funds for these purposes would exceed $2.5 million in the period 1973-80.

The operational cost per year from general fund appropriations for each additional student in this expansion program is estimated to be at the current level of $9,655 per student. At this level, an increase in annual general fund appropriations of approximately $2.1 million will be required by 1979-80, over that of 1972-73, for the purpose of achieving this projected enrollment increase. This level may be expected to increase through the funding of new programs or program improvements in the change budget process. It should be noted that general fund appropriations now comprise about one-third of the annual operating budget of the medical school, with two-thirds derived from clinical income, grants, contracts, endowments, etc., and we are assuming a continuation of this general pattern of funding.

Again, we would point out that the expansion of the School of Medicine at Chapel Hill, joined to the new area health education program and to the expansion of hospital affiliations and similar arrangements, offers yet another ready means of increasing our output of physicians in the immediate future. Tables A and B will show increases in enrollments and in graduates that this expansion would produce. Note that enrollment would increase from 427 in 1972-73, of whom 384 are North Carolina residents, to 640 in 1979-80, of whom 576 would be North Carolinians. Achievement of these objectives would mean that The University at Chapel Hill would produce 1133 M.D. graduates, of whom 1001 would be North Carolinians, during the decade 1971-80, as compared with 648 M.D.'s of whom 600 were North Carolina residents during the decade 1961-70.

The combined effects of methods one and two, on total enrollment in medical schools and on the number of M.D. graduates from these schools, can be summarized as follows:

I. Enrollments

	1972-73		1979-80 (Projected)	
	N.C.	Total	N.C.	Total
Bowman Gray	157	315	208	392
Duke	84	382	144	504
Meharry	20	---	20	---
UNC-CH	384	427	576	640
	645	1124	948 (+47%)	1536 (+37%)

II. M.D. Graduates

	1961-70		1971-80 (Projected)	
	N.C.	Total	N.C.	Total
Bowman Gray	249	510	399	807
Duke	168	816	241	1035
Meharry	50*	---	50	---
UNC-CH	600	648	1001	1133
	1067	1974	1691 (+58%)	2975 (+51%)

The number of North Carolina residents graduating with the M.D. degree from these schools in 1980 will have increased 149% over the number graduating in 1971.

The estimated costs of this expansion would be:

Capital Expenditures

MacNider renovation and new building (as in 1973-75 budget request)	$16,370,000
Additional projects	3,500,000
	$19,870,000

State appropriations for current operations and other purposes

UNC-CH: Increase of $2.1 million per annum by 1979-80, at present appropriation level

Private schools: Increase of $1.1 million per annum by 1978-79

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*An approximation. Exact data for each year of the

Method Three: Establishment of a New Degree-Granting Medical School

Costs estimates for the establishment of a new medical school are very difficult to determine with precision. East Carolina University, in proposing a two-year school as the next step in the development of a degree-granting school, made no cost estimates in its presentations to this committee. We therefore requested the President to obtain data on this question. He received general estimates from AAMC and specific information on capital and operating costs from a number of State universities which have established new schools in the immediate past, or are in the process of establishing such schools at this time.

One example will suffice to illustrate the hazards of predicting these costs. A school was established in the 1960s with a gift of $50 million provided at the outset. It was planned then to expend $30 million of this gift for capital projects and utilize the remaining $20 million for operations. The school graduated its first class of 35 students in 1972. At that time it had expended $66 million on capital projects and was preparing to initiate another project this year which will require an additional $13 million. Annual operating costs, with an entering class of approximately 90 students are now at the level of $8 million. The high capital expenditure rate in this institution reflects, in part, its construction of a teaching hospital, at a cost of $21 million of the $66 million expended to date.

A recent study of the costs of medical school construction and operations found that capital expenditures at most new medical schools and their teaching hospitals had been $30 million to $40 million, but in some instances from $50 million to $100 million. It also found that average operating expenditures of medical schools was $3.7 million per year in 1958-59, while in 1968-69 the average was $15 million.[4]

Several new medical schools have been established in recent years without providing for a teaching hospital owned and operated by the school. These schools rely instead upon affiliation agreements with community hospitals. Here again there are accreditation standards to be met, which require medical school control over those clinical facilities in its educational program. Such an arrangement thus requires careful advance planning and study to assure the availability of hospital facilities and contractual assurances of affiliation. When these arrangements can be made, a substantial savings in capital expenditures can be achieved.

The general estimates given us by AAMC for new schools with such arrangements are as follows:

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[4] Kenneth B. Castleton in Journal of the American Medical Association, Vol. 216, No. 12, June 21, 1971, p. 1991.

1.	Start-up costs	2.5 Million
2.	Construction costs (1965-70 experience)	
	A. Site preparation	2.2 Million
	B. Basic science facility	10.0 Million
	C. Renovation of community hospital for teaching purposes	2.0-4.0 Million
3.	Annual operating costs for educational program at time of graduation of first class (assuming a faculty of 100-110; a graduating class of 24; and an enrollment objective of 48-64 students in each of four classes)	5.0-6.5 Million
4.	Operating costs with affiliated hospitals	2.0-5.0 Million

It will be noted that these construction costs do not reflect rising price levels. The basic science facility planned by East Carolina was estimated this year to cost \$12.2 million, exceeding the AAMC figure by 22%. We have found, in fact, that capital expenditures in new schools that we have contacted have ranged from a low of \$7 million to a high of \$28.6 million, by the time of the first graduating class, where no hospital was built. The low figure was for a school which was given a 500 bed county hospital and which is operating in temporary basic science facilities. It is now planning the construction of permanent buildings. Two schools which are depending upon community hospital affiliation agreements found it necessary to build outpatient clinical facilities which cost \$15 million in one instance and \$8.9 million in the other.

In summary, we would estimate the costs of a new degree-granting school to be:

First, capital expenditures would be \$15 million at a minimum, at current price levels, and probably nearer \$20 million, and not including a teaching hospital.

Second, operating costs for the educational program would be from $5 million to $6.5 million annually by the time the first class was graduated.

Third, affiliation agreements would cost from $2 million to $3 million a year, minimum.

A school authorized this biennium would not likely graduate any students before 1979, and quite possibly later than that. Instructional costs would be very high per student during the early years, and contractual arrangements for access to hospital facilities would have to be negotiated with provision for at least 350 beds if the school is to expand to a size sufficient for efficient operations. If such contractual arrangements could not be reached, or the quantity of hospital facilities were not adequate, a major teaching hospital would have to be constructed. The costs for this would be in the range of $20 million to $30 million.

G. SUMMARY AND RECOMMENDATIONS

During the six months this committee has been at work, much has been learned about medical education and the delivery of health care to citizens. This experience, limited necessarily by time and by the complexity of the issues we confronted, has led us to a series of recommendations addressed both to immediate steps that may be taken regarding established institutional programs to graduate more doctors during the next five to seven years, and, to the broader and more far-reaching question of the need for a second state-supported degree-granting school of medicine.

The recommendations that follow are based upon our unanimous judgment that North Carolina does need more doctors and our conclusion that when there are more graduates coming from the medical education programs of the State, more areas and regions of North Carolina will benefit from better health care.

Recommendations

This committee has concluded that the following recommendations should be presented to the Board of Governors:

Recommendation #1

On the basis of the testimony and evidence presented to it, this committee believes that North Carolina's needs for better health care are so acute that we need,not only to support the enrollment of more North Carolinians in the Bowman Gray and Duke Schools of Medicine, as set forth in Recommendation #2, and to expand the School of Medicine of The University of North Carolina at Chapel Hill, as set forth in Recommendation #3,but also to consider seriously the establishment of a new, degree-granting school of medicine which would emphasize the training of primary care physicians. Accordingly, we recommend that the Board of Governors commission the appointment of a team of experienced and qualified national consultants to evaluate the need for an additional degree-granting school of medicine within The University of North Carolina. It is further recommended that in their study the consultants be directed to examine all possible institutional alternatives, including, specifically, the present medical education program at East Carolina University, for the provision of additional doctors in all regions of the State.

The consulting team should begin work as soon as practicable and should be requested to submit recommendations to the Board of Governors by September 1, 1973. It is recommended that $50,000 be requested by the Board of Governors to finance this study.

This comprehensive study by the consultants and consideration of their report by the Board of Governors is essential prior to the commitment of substantial State tax resources to build a second state-supported degree-granting school of medicine. For this reason the specific budget requests submitted by East Carolina University for the biennium 1973-75 to fund a two-year medical education program on that campus should not be approved.

Recommendation #2

It is the judgment of this committee that an immediate and continuing increase in the number of physicians graduating from Bowman Gray and Duke Schools of Medicine may be achieved during the remaining years of this decade. We, therefore, recommend:

(1) that the State appropriate $5,000 for each North Carolina student enrolled in the Bowman Gray and Duke Schools of Medicine during the 1973-75 biennium, so that these private schools may continue to increase their North Carolina enrollments;

(2) that beginning in 1975-76, the State appropriate at least $6,000 for each North Carolina student enrolled in the Bowman Gray and Duke Schools of Medicine over and above the 1974-75 base.

This recommendation is based on anticipated enrollments of North Carolina students at the two Schools as follows:

School	1973-74	1974-75	1975-76
Bowman Gray	172	178	187
Duke	105	115	129

The estimated cost of the expanded grant program to the private Medical Schools is $1,385,000 for 1973-74, $1,465,000 for 1974-75. The cost estimates contemplate that the tuition reduction portion of the grant will remain at $500 per student and that the cost of education allowances will be increased from the present $2,500 per student to $4,500 for the 1973-75 biennium.

The committee further recommends continued support of the SREB program providing spaces for 20 North Carolina medical students at Meharry Medical College. Currently this program is supported with an annual appropriation of $65,000, and this contract is renegotiated periodically.

Recommendation #3

It is clear that the number of doctors graduating from the School of Medicine at the University at Chapel Hill can be increased during the remaining years of this decade. We, therefore, recommend the following action by the Board of Governors:

(1) that funds be provided in the 1973-75 biennium for the renovation of MacNider Hall and for the construction of a new laboratory-office building, as set forth in lines 18 and 32 of the 1973-75 change budget request;

(2) that the School of Medicine of the University of North Carolina at Chapel Hill be authorized to increase the size of its entering class to 140 in 1975 and to 160 in 1976, and to proceed to the goal of an enrollment of 640 M.D. degree candidates by 1979-80; and

(3) that 20 degree candidates continue to be enrolled in the medical education program at East Carolina University, pending the completion of the action in Recommendation #1, above.

Recommendation #4

The experience of this committee in its own study of medical education in North Carolina mandates, in our judgment, that the Board of Governors establish as soon as practicable a continuing overview of institutional activity in the health sciences. Even a casual examination of the range and magnitude of programs currently offered by the several campuses under the jurisdiction of this Board makes clear that constant attention and accumulating knowledge and experiences are essential to the successful discharge of responsibility by the Board of Governors in this major field of endeavor. We, therefore, recommend that the Code Committee of the Board of Governors explore the possibility of establishing a standing Committee on the Health Sciences to advise and consult with the President on all institutional programs related to the health sciences.

Recommendation #5

Our experience, and that of the President and his staff in providing assistance to this committee during these six months, makes it quite clear that a senior-level staff officer with established competence and extensive knowledge in health sciences should be added as soon as possible to the General Administration staff. We, therefore, recommend that the President be authorized to search for and, thereafter, recommend the appointment of such a qualified person to the Board of Governors.

Recommendation #6

That this committee, upon presentation of this report to the Board of Governors by its Chairman be discharged from further responsibility to the Board of Governors.

This report is submitted in response to the request of Governor Robert Scott, then Chairman of the Board of Governors, set forth in his letter of June 28, 1972 to the members of this special committee of the Board of Governors.

Respectfully submitted,

Dr. Andrew A Best
Andrew A. Best, M.D.

W A Johnson
William A. Johnson

Reginald McCoy
Reginald McCoy

W B Rankin
William B. Rankin

, Chairman
Robert B. Jordan, III

TABLE A

CURRENT AND PROJECTED ENROLLMENTS IN NORTH CAROLINA MEDICAL SCHOOLS 1972-1980

Year	Bowman Gray		Duke		UNC-Chapel Hill		Total		Percentage Increase	
	All Students	North Carolina Students	All Students	North Carolina Students	All Students	North Carolina Students	All Students	North Carolina Students	All Students	North Carolina Students
1972-73	315	157	382	84	427	384	1,124	625		
1973-74	329	172	421	105	471	423	1,221	700	9	12
1974-75	345	178	450	115	500	450	1,295	743	6	6
1975-76	365	187	473	129	532	479	1,370	795	6	7
1976-77	374	194	480	132	560	504	1,414	830	3	4
1977-78	383	201	492	138	590	531	1,465	870	4	5
1978-79	392	208	504	144	620	558	1,516	910	3	5
1979-80	392	208	504	144	640	576	1,536	928	1	2

Cumulative Increase 37% 48%

M.D. GRADUATES FROM NORTH CAROLINA MEDICAL SCHOOLS
ACTUAL AND PROJECTED
1961-1980

Year	Bowman Gray		Duke		UNC-Chapel Hill		Totals	
	All Graduates	North Carolina Graduates	All Graduates	North Carolina Graduates	All Graduates	North Carolina Graduates	All Graduates	North Carolina Graduates
1961 Through 1970 - Total	510	249	816	168	648	600	1,974	1,017
1971	57	23	87	10	76	60	220	93
1972	61	25	86	15	70	54	217	94
1973	75	30	75	9	87	77	237	116
1974	73	39	85	20	100	89	258	148
1975	78	43	103	22	110	100	291	165
1976	89	45	119	33	130	117	338	195
1977	89	45	114	30	130	117	333	192
1978	89	45	114	30	130	117	333	192
1979	98	52	126	36	140	126	364	214
1980	98	52	126	36	160	144	384	232
1971 Through 1980 - Total	807	399	1,035	241	1,133	1,001	2,975	1,641

Cumulative Increase 51% 61%